

REMARKS

Claims

Claims 1-22 are pending. Claim 22 has been added. Support for newly added Claim 22 is found in the specification at page 8, lines 5-6 and page 9, line 11. No claims have been deleted in this response. In view of the foregoing amendment and the arguments that follow, Applicant respectfully requests withdrawal of all rejections upon reconsideration.

Rejections under 35 U.S.C. § 103(a)

Claims 1-11 and 19-21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Appleyard et al. (WO 9725568) ("Appleyard") in view of Tourres (U.S. Patent 4,170,417) ("Tourres"). More specifically, the Office Action cites Appleyard for teaching "a safety system for an industrial press having a moveable section, comprising: a laser emitting means (22) for emitting a laser beam; a light receiving means (24) for receiving the laser beam and for detecting when an object intersects the laser beam; and a control means (25) for stopping or preventing movement of the moveable section of the press when the receiving means detects that the laser beam has intersected the object" (Office Action, p. 2-3). Further, the Office Action cites Tourres for teaching "a laser emitting means for emitting a continuous planar laser beam having a constant lateral width for *object detection*" (Office Action, p. 3) (emphasis added). Specifically, the Office Action states that Appleyard discloses all of the essential features of Claim 1 except for a continuous planar laser beam having a generally constant lateral width, which feature, the Office Action states, can be found in Tourres (Office Action, p. 2-3).

Applicant respectfully traverses and submits that the pending claims are allowable over Appleyard in view of Tourres because, *inter alia*, (1) the Office Action fails to state a *prima facie* case for obviousness because the motivation to combine the references is insufficient or illusory, (2) Appleyard is not capable of adopting Tourres's single planar beam without impermissibly changing a fundamental principle of operation of Appleyard, (3) Appleyard teaches away from using a single planar beam, and (4) Tourres is non-analogous art and, even if one were to consider Tourres, there is no teaching or incentive to modify Appleyard in view of Tourres.

There is No Prima Facie Case of Obviousness

The Office Action tacitly acknowledges that neither Appleyard nor Tourres explicitly suggest their combination. Rather, the Office Action suggests that the motivation to provide the laser emitting means of Tourres in the apparatus of Appleyard would be “to reduce the number of laser emitting sources and save costs.” (Office Action, Oct. 24, 2003, p. 4, Office Action, May 25, 2004, p. 5).

The purported motivation to combine, however, is deficient for two independent reasons: first, the proposed modification would likely not produce a decrease in the cost of the Appleyard system and, second, a cost savings would be insufficient motivation to combine the references because safety concerns would outweigh concerns of costs savings. The application of a laser beam expanded to a planar beam through light splitters and lenses likely would be more expensive and more complex than using three standard individual laser emitters as taught by Appleyard, which would render the motivation deficient.

Further, safe working environments, which are a critical aspect of manufacturing, require special consideration beyond that of cost. The costs savings (if any) of the claimed invention over (for example) Appleyard is relatively immaterial to the goals of safety. Merely reducing the number of laser emitting sources to a single planar source would likely decrease the efficiency of Appleyard’s safety apparatus since its control system would not have multiple light beams to differentiate between, which might lead to an error situation. Accordingly, because safe working environments are critical, one would not be motivated to implement a single planar beam in Appleyard to solely reduce costs while also potentially increasing the hazard of using the tool it was affixed thereon. Accordingly, the Office Action’s basis for the motivation to combine Appleyard and Tourres – cost – is insufficient and, thus, the Office Action lacks a prima facie case for obviousness.

Appleyard Cannot Be Modified According To The Teachings Of Tourres Without Impermissibly Changing A Fundamental Principle Of Operation

Appleyard discloses an optical safety device for mounting onto the moving blade of a press break, and teaches multiple laser emitters and corresponding multiple laser light

receivers (Appleyard, p. 3, lines 14-18) that are mounted to reduce effects of vibration. In particular, Appleyard teaches that:

laser diodes are mounted in adjustable sites (not shown) to focus and direct the *light beams along their respective paths*. . . . [A] mounting block specially [sic] fixes their position relative to each other so that any vibrational effects upon the light emitting means 22 are transmitted *equally and simultaneously to all of the lasers*. . . . [Corresponding] *multiple light receiving means 24* form a separate discrete unit by similarly being press fitted into another solid nylon mounting block for minimizing and uniformly transmitting any vibrational effects applied to the light receiving means 24 to the laser sensor.

(*id.*, p. 12, lines 9-20) (emphasis added).

Appleyard provides no motivation to modify its system by the addition of a planar beam disclosed in Tourres. In fact, Appleyard likely cannot adopt a single planar beam and still function as it was intended because Appleyard teaches that each of its light beams are differentiated from other light beams and each receiver circuit senses only its corresponding light beam. Specifically, Appleyard teaches that:

each laser is electrically connected to a corresponding driver circuit 52a, 52b or 52c, all of which form part the control means for switching the laser diode 39 connected thereto in a particular way *to differentiate the light beam emitted therefrom from the other light beams*. Similarly, the laser sensor 41 is electrically connected to a corresponding laser receiving circuit 53a, 53b or 53c, all of which also form part of the control means *for sensing receipt of only that light beam emitted from the laser diode to which the laser receiving circuit corresponds*.

(*id.*, p. 14, lines 9-16 & Figure5) (emphasis added). Furthermore, Appleyard teaches that “the receipt of different lasers can be differentiated between each other by virtue of their unique modulation or encoding as opposed to alignment with corresponding apertures” (*id.*, p. 14, lines 28-30) (emphasis added).

Thus, a fundamental principle of Appleyard is the use of *multiple* individual light beams with the corresponding sensors arranged *so as to differentiate* the individual detected light beams from one another. The sensors disclosed in Appleyard would not be able to differentiate a continuous planar beam from itself. Accordingly, incorporation of a single planar laser into Appleyard would not provide a reasonable expectation of success without

impermissibly modifying Appleyard in a way that would impermissibly change Appleyard's fundamental principles of operation.

Appleyard Teaches Away From A Single Beam

As explained above, Appleyard teaches away from using a single beam in order to differentiate between the respective lasers. Appleyard discloses that the laser control and processing means 54 of Appleyard is:

designed to operate the pulsing means 55 so as to cause the laser driver circuits 52 to generate laser light beams in the prescribed manner. The pulsing means 55 modulates the respective laser driver circuits 52 with a unique code at the same or different frequencies *in order to differentiate between the respective emitted light beams*. This code is a prescribed repetitive digital code which can be accurately sensed by the corresponding laser receiving circuits 53 of the light receiver means and be processed by the laser control and processing means 54 to detect an interruption caused by the incursion of an object into any one of the light beams. Accordingly, the laser control and processing means 54 is programmed to continuously monitor the signals received from the laser receiving circuits 53 in conjunction with operating the pulsing means 55 and determine whether *all three beams* are received and sensed at the same time within a prescribed period of time. If this does not occur, then it is assumed that one or more light beams have been obstructed and a contingency procedure is invoked involving the laser control and processing means 54 immediately triggering the halting means 57 to halt advancement of the blade 18.

(*id.*, p. 16, lines 9-25) (emphasis added). Appleyard clearly teaches that multiple independent beams and a suitable *processing means are required* such that the processing means can differentiate one beam from the other and determine whether one or more beams have been broken. Appleyard cannot operate with a single continuous planar laser beam having a generally constant lateral width because the processing system would not have multiple beams to differentiate for processing purposes. Thus, Appleyard teaches away from using a single beam in order to differentiate between the respective lasers.

Tourres Teaches Away And Is Non-Analogous Art

Tourres does not teach or suggest being used in combination with safety systems for an industrial press. Tourres teaches a device for measuring the profile of a body using one or

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more planar laser beams (Tourres, col. 1, lines 43-48). Specifically, Tourres relates to optical *measurement of the shape and dimensions of glass bottles* (*id.*, col. 1, lines 6-8). The device utilizes detectors that are movable relative to the beams (*id.*, col. 1, lines 43-48). Accordingly, Applicant submits that Tourres teaches away from the present invention.

Further, Tourres is non-analogous art (i.e. it is directed to measurement of bottles on a conveyor belt). The measurement and statistical focus of Tourres, as compared to the critical nature of a safety system as claimed, would ensure that a person skilled in the art would not look to Tourres to modify Appleyard. Accordingly, Applicant respectfully submits that one skilled in the art in the technical field of safety systems for press brakes would not, without using impermissible hindsight, have been motivated to combine the multiple beam system of Appleyard with the multiple expanded planar laser beam *measuring* device of Tourres to arrive at the combination of features of Applicant's invention.

CONCLUSION

Applicant submits that all of the claims are in condition for allowance and requests favorable consideration thereof. If the Examiner determines that a telephone conversation would further prosecution of this case, the Examiner is invited to telephone the undersigned at the Examiner's convenience.

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